

Amendment To The Claims

The following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A method for generating a genetically modified organism for drug screening, which comprises the steps of:

a) causing heterologous expression of at least one protein or protein fragment by genetic modification of the organism wherein the expression does not produce a detectable change of the phenotype which is perceptible from the outside of said organism

b) analyzing the modified gene expression pattern and identifying compensating differentially regulated genes

c) phenotyping the organism wherein phenotyping is carried out by the reduction or elimination of compensating differential expression or by the labeling of at least one compensating differentially regulated gene which is perceptible from the outside of said organism.

2. (Canceled)

3. (Previously amended) The method of claim 1 wherein the genetic modification causes heterologous expression of at least one protein or protein fragment which is endogenous or foreign to the organism.

4. (Previously amended) The method of claim 3, wherein the genetic modification causes reduction or elimination of the expression of at least one protein endogenous to the organism.

5. (Previously amended) The method of claim 4, wherein the modified expression is inducible.

6. (Previously amended) The method of claim 5, wherein the genetic modification comprises introducing a vector which enables the protein or protein fragment

to be inducibly expressed, preferably a vector inducible with galactose, copper tetracycline or other comparably inducible vectors.

7. (Previously amended) The method of claim 6, wherein the genetic modification comprises a knock out, preferably an inducible knock out.

8. (Previously amended) The method of claim 1, wherein the organism is drosophila, C. elegans, a prokaryotic or a eukaryotic cell.

9. (Previously amended) The method of claim 8, wherein the cell is a yeast cell, preferably a yeast cell of the strain S. cerevisiae.

10. (Previously amended) The method of claim 9, wherein the modified gene expression is analyzed with the aid of DNA or protein microarrays.

11. (Previously amended) The method of claim 10, wherein phenotyping is carried out by reducing or eliminating expression of the compensating differentially regulated gene.

12. (Previously amended) The method of claim 11, wherein expression of the compensating differentially expressed gene is enhanced in control organisms and the reduction or elimination is caused by at least partial inhibition of said enhanced expression.

13. (Previously amended) The method of claim 7, wherein the knock out of the differentially expressed gene is carried out by replacing at least part of the coding sequence of the differentially regulated gene with the coding sequence of a reporter gene or parts of the reporter gene sequence which are sufficient to be detected.

14. (Previously amended) The method of claim 11, wherein the differentially expressed gene is less strongly expressed than in control organisms and the reduction or elimination of the differential expression is carried out by enhancing expression of the differentially expressed gene.

15. (Previously amended) The method of claim 14, wherein the reduction or elimination leads to growth inhibition of the organism.

16. (Cancelled)

17. (Previously amended) A genetically modified, phenotyped organism, obtained by the method of claim 1.

18. (Currently amended) A genetically modified organism, having

a) genetically modified expression of at least one endogenous or foreign gene, which results in compensating differential expression of at least one other gene endogenous to said organism, and

b) a phenotype caused by the reduction or elimination of the compensating differential expression of the gene or ~~by labeling the compensating differentially regulated gene product which is perceptible from the outside of said organism.~~

19. (Cancelled)

20. (Previously amended) A method for identifying a substance having an effect on the function of a heterologously expressed protein or protein fragment, which method comprises the steps of:

a) contacting said substance with said genetically modified organism of claim 17 or 18 and
b) measuring the change in said modified organism as compared to genetically unmodified organism.

21. (Previously amended) An assay for drug screening using at least one phenotyped organism as claimed in claims 17 or 18, which comprises the steps of:

a) determining the phenotype of said organism
b) contacting the substance to be tested with said organism
c) observing a possible modification of said phenotype.

22. (Cancelled)